Dec. 17, 1968 J. L. MARTIN 3,416,183

ROLLER ASSEMBLY FOR A SLIDING CLOSURE

Filed Aug. 22, 1966

Fig. 1.

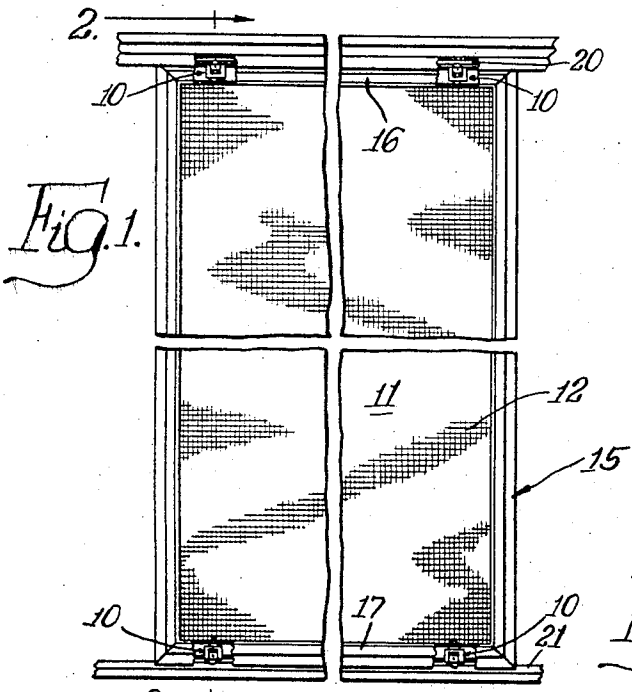

Fig. 2.

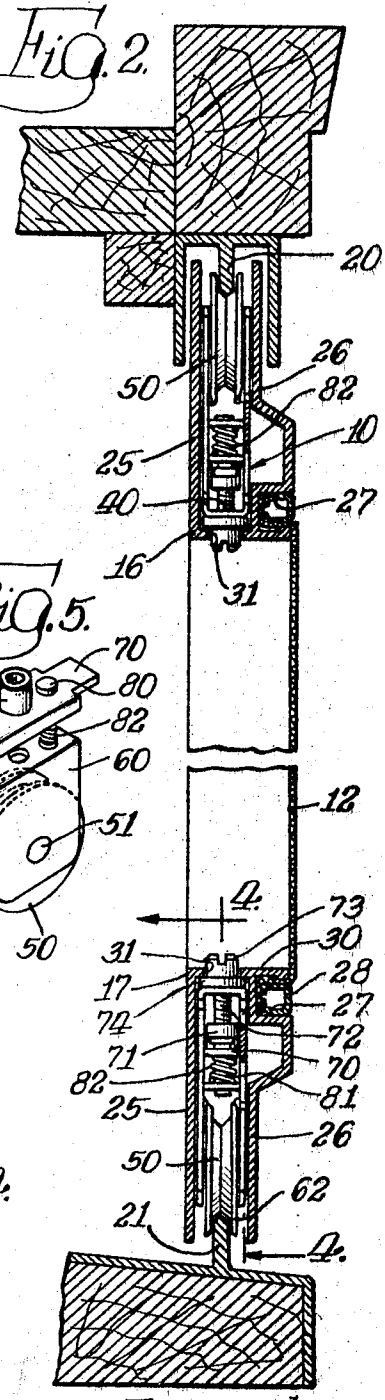

Fig. 3.

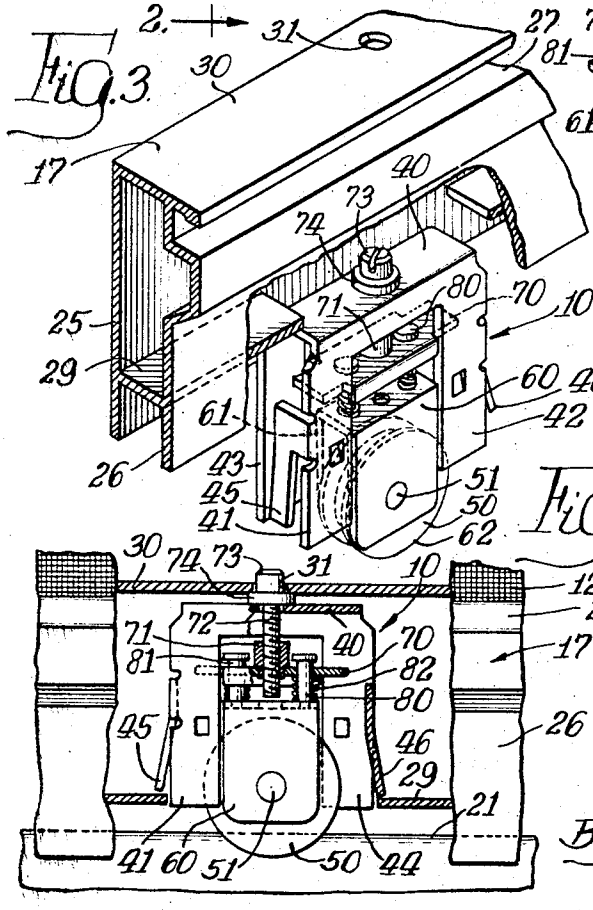

Fig. 5.

Fig. 4.

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ROLLER ASSEMBLY FOR A SLIDING CLOSURE

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ABSTRACT OF THE DISCLOSURE

A roller assembly for a sliding closure which is a self-contained unit for simple insertion into the frame of a sliding closure and wherein the roller member of the assembly can have its position of extension relative to the sliding closure frame simply adjusted by a rotatable member fixedly located in the closure frame and, further, wherein the adjustment can be made without varying the over-all effect of a floating mounting for the roller provided by spring means located between the base of the roller assembly and the movable part which carries the roller.

This invention relates to roller assemblies and, more particularly, to such a roller assembly for use with a sliding closure.

Various forms of roller supports for sliding closures, such as doors, are known in which the closure is mounted on upper and lower guide rails or tracks by means of track-engaging rollers carried on the closure. Many different structures have been devised for mounting the rollers on the closure which require attachment of a variety of parts to the frame of the closure and which can only be adjusted relative to the closure by making modifications to the closure frame for access to the roller which are not generally acceptable.

An object of this invention is to provide a roller assembly for a sliding closure which is of a simple unitary construction which can be inserted as a single unit into the frame of the sliding closure and which can be adjusted simply after assembly in the frame.

Another object of the invention is to provide a roller assembly for mounting in a sliding closure frame and having a base insertable into the interior of the closure frame and securable therein with a roller mounting guided for movement on the base and with a rotatable adjusting member carried on the mounting for positioning the roller relative to the base, said adjusting member being positioned for engagement in an opening in the inner face of the closure frame and captured in position always to be exposed for adjustment.

Another object of the invention is to provide a roller assembly as defined in the preceding paragraph wherein the roller mounting can be adjusted by the aforesaid structure, and further the roller is spring-loaded to be yieldable in engagement with the supporting track so as to adjust to irregularities of the track and to facilitate installation and removal of the closure.

Still another object of the invention is to provide a roller assembly as defined in the preceding paragraphs in which the parts are formed of simple components and which interfit with each other for guiding movement of one part relative to the other and wherein the assembly has a structure formed as an integral part thereof for locking the assembly to the closure frame.

Further objects and advantages will become apparent from the following detailed description taken in connection with the accompanying drawings in which:

FIG. 1 is a vertical elevation of a sliding closure with guide tracks having a number of the roller assemblies associated therewith, with the closure broken away to reduce the size of the showing thereof and the closure

frame broken away to show the roller assemblies associated therewith;

FIG. 2 is a vertical section on an enlarged scale taken generally along the line 2—2 in FIG. 1;

FIG. 3 is a fragmentary exploded perspective view of the roller assembly positioned for insertion into the closure frame;

FIG. 4 is a vertical section, taken generally along the line 4—4 in FIG. 2; and

FIG. 5 is a perspective view of the roller mounting of the assembly.

While this invention is susceptible of embodiment in many different forms, there is shown in the drawings and will herein be described in detail an embodiment of the invention with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the embodiment illustrated. The scope of the invention will be pointed out in the appended claims.

A plurality of roller assemblies indicated generally at **10** are shown associated with a sliding closure in FIG. 1. The sliding closure **11**, which as shown may be a patio screen door having screen material **12**, has a surrounding frame **15** with an upper frame section **16** and a lower frame section **17**, each mounting a pair of the roller assemblies **10** to support and guide the closure for movement along an upper track **20** and a lower track **21** mounted on a suitable supporting framework. As will be seen in FIG. 1, the frame **15** surrounds the entire door structure with beveled abutting corners so that the interior of the frame is not exposed anywhere along the entire perimeter of the closure.

The lower frame section **17** is shown in section in FIG. 3 and in part broken away at the location of a lower roller assembly. The closure frame section **17** is typical and in a preferred form can be formed as an extrusion of light metal, such as aluminum. The extrusion has a rear panel **25** and a front panel **26**, with the front panel recessed at **27** to receive a peripheral edge of the screen material **12** as held therein by a securing strip **28** (FIG. 2) An internal bracing wall **29** extends between the frame panels **25** and **26** and is cut through at the location of a roller assembly as shown in FIG. 3, to coact with parts of the roller assembly to hold the latter in assembled relation with the frame. Addtionally, the frame section has an inner face **30** which is provided with an opening **31** through the wall thereof at the location of each of the roller assemblies.

Each of the roller assemblies **10** is of the same construction regardless of whether it is associated with the lower frame section **17** or the upper frame section **16**. The construction is shown particularly in FIGS. 2, 3 and 4 and includes a geenrally U-shape base formed from a single stamping with a central section **40** and a pair of spaced-apart legs with each leg having spaced front and rear generally planar sections, whereby a space is defined between the legs of the base and also between the sections of each leg. One leg has front section **41** and rear section **43**, while the other leg has front section **42** and rear section **44**. The front leg sections **41** and **42** have a pair of downwardly-extending fingers **45** and **46** formed integrally therewith and bent to a right angle relative thereto whereby upon insertion of the base into the interior opening in the closure frame section, the fingers **45** and **46** can be bent outwardly in opposite directions to overlie the adjacent edges of the internal wall **29** of the frame, as shown in FIG. 4. With the base formed of thin metal, the legs can be bent relatively easily and, once bent, remain in their deformed positions.

A roller mounting associated with the base mounts a

track engaging roller **50** formed of nylon or other suitable, relatively slippery material, with the roller rotatable on a pin **51** supported by the mounting. The roller mounting, in a preferred embodiment, comprises a two-part construction with a lower U-shaped part having spaced-apart front leg **60** and rear leg **61**, with the pin **51** extended therebetween and the roller **50** lying in the space between the mountnig legs. As shown in FIGS. 3 and 4, the legs **60** and **61** of the roller mounting are disposed in coplanar relation with the front and rear leg sections of the base, whereby the U-shape roller mounting part is guided for up and down movement relative to the base, with the alignment further established by flanges **62** on the roller **50** which are of a diameter greater than the space between the legs of the base so as to overlap and lie behind the leg sections and assist in guiding the roller and roller mounting in their adjusting movement relative to the base.

The other part of the roller mounting comprises a generally flat plate **70** having reduced ends lying in the space between the front and rear sections of the base legs for confinement thereof against rotation and having a threaded sleeve **71** affixed thereto.

The two parts of the roller mounting are held in assembled relation by structure subsequently to be described and means are provided for causing adjusting movement of the roller mounting and the roller relative to the base which is secured in the closure frame. This means comprises a threaded member, such as a machine screw or bolt **72** threaded into the sleeve **71** affixed to the mounting plate **70** and extending through an opening in the central section **40** of the base and therebeyond. The bolt has a head **73** of a size to extend through the opening **31** in the inner face **30** of the frame section, as shown in FIGS. 2 and 4, to permit access thereto for imparting rotation to the bolt for adjusting the mounting plate **70**. The head **73** is maintained in a fixed location by having an enlarged collar **74** beneath the head of a diameter larger than the opening **31** in the frame section to confine the bolt against longitudinal movement between the frame section and the central section **40** of the roller assembly base, as shown in FIGS. 2 and 4. Rotation of the bolt in one direction will cause the mounting plate **70** to move upwardly relative to the base, while rotation in the opposite direction will cause movement of the mounting plate **70** downwardly.

With this adjusting structure, it is possible to insert the roller assembly in a completely enclosed sliding enclosure frame while still permitting easy access to the head **73** of the bolt which, at all times, remains in a fixed position relative to the enclosure frame.

The U-shape roller mounting part is held in association with the mounting plate **70** by a pair of headed pins **80** and **81** which are fixed at their lower ends to the U-shape roller mounting and are movable within openings provided in the mounting plate **70**. As shown in FIG. 3, the heads of the pins **80** and **81** are resting on the plate **70**, while in FIG. 4, the pins have been elevated to raise their heads to a position spaced from the mounting plate **70**. The pins **80** and **81** permit a floating mounting of the roller **50** relative to the base of the assembly, with this mounting being spring-loaded and yieldable by means of a pair of compression springs **82** associated one with each of the mounting pins and positioned between the top of the U-shape roller mounting and the mounting plate **70** whereby the springs normally urge the U-shape roller mounting to an extreme limit position relative to the mounting plate **70** as limited by the heads on the mounting pins **80** and **81**.

With the foregoing structure, the roller assembly can be made of simple parts and, when assembled, can be handled as a unitary device insertable into a closure frame without requiring any attaching hardware or auxiliary adjusting structure. Once the assembly is inserted, the fingers **45** and **46** are bent outwardly to hold the assembly base associated with the closure frame and this results in the head **73** of the bolt being exposed to permit adjustment. The bolt can then be rotated to obtain the final adjustment of the roller **50** relative to its base and the closure frame and the two-part construction of the roller mounting with the interposed spring means provides a spring-loaded mounting for the roller to permit adjustment thereof to irregularities of the supporting track, as the closures move therealong and, also, to facilitate installation and removal of the closure. With the relatively light weight of the closures, such as a patio screen door, the springs **82** are effective, at all times, to provide a floating mounting of the closure on the track.

I claim:

1. A supporting roller assembly for a sliding closure mountable within the frame of the closure with the frame having an opening on an interior face thereof comprising, a base positionable in said frame and having means for interlocking the base to the frame, a roller mounting movably guided by said base and having a roller rotatably mounted thereon whereby the position of said roller relative to the base can be varied, and rotatable means exposed through said frame opening and threaded to said mounting for adjusting said base and mounting relative to each other, said rotatable means having a member thereon for capture between said base and frame to hold said rotatable means against longitudinal movement whereby the rotatable means in all positions thereof is exposed through said frame opening.

2. An assembly as defined in claim **1** wherein said rotatable means comprises a bolt with a head extendable through said frame opening, and said member is a collar on said bolt beneath the head of a diameter greater than said frame opening and greater than an opening for the bolt in said base.

3. An assembly as defined in claim **1** wherein said mounting is formed of two parts with the rotatable means connected to one part and the roller mounted on the other part and spring means between said parts providing a yieldable mounting for said roller.

4. An assembly as defined in claim **3** wherein a pair of pins slidably interconnect said two parts of the mounting and said spring means comprises a pair of compression springs guided on said pins and captured between the mounting parts.

5. An assembly as defined in claim **1** wherein the means for interlocking the base to the frame includes a pair of bendable fingers at opposite sides of the base which can be bent to engage behind a frame wall when the assembly is positioned in the frame.

6. A roller assembly for a sliding closure having a frame with an interior chamber for receiving the assembly comprising, a generally U-shape base with a central section and a pair of legs depending therefrom with each leg thereof having spaced apart generally planar front and rear sections, a U-shape roller mounting having a pair of spaced apart legs with a roller disposed therebetween, said mounting legs being positioned between the legs of said base for movement lengthwise thereof, a threaded member operatively connected to the roller mounting and loosely mounted in an opening in the central section of the base, and a head end of said threaded member at the side of the central section opposite said mounting being of a size greater than said central section opening to prevent fall-out of the threaded member and roller mounting.

7. A roller assembly as defined in claim **6** wherein said mounting legs are disposed in coplanar relation with the front and rear sections of said base legs for guiding of said mounting during linear movement relative to said base.

8. A roller assembly as defined in claim **7** in which said roller has flanges in the space between the base front and rear sections and in overlapped relation therewith to maintain the generally planar relation of the base and mounting.

9. A roller assembly as defined in claim 8 in which said roller mounting is formed of two parts with the threaded member connected to one part and the roller mounted on the other part, and spring means between said parts providing a yieldable mounting for said roller.

10. A roller assembly as defined in claim 8 in which said mounting parts are interconnected for relative movement by a pair of pins, and said spring means comprises a pair of springs mounted on said pins and engaged between said parts.

11. A roller assembly for a sliding closure having a frame with an interior chamber for receiving the assembly comprising, a generally U-shape base with a central section and a pair of legs depending therefrom with each leg thereof having spaced apart generally planar front and rear sections, a U-shape roller mounting having a pair of spaced apart legs with a roller disposed therebetween, said mounting legs being positioned between the legs of said base for movement lengthwise thereof, and means for adjusting the position of said mounting relative to said base.

12. A roller assembly as defined in claim 11 wherein the roller mounting is formed of two parts, means connecting said two parts together for relative movement while limiting the maximum distance therebetween, and means yieldably urging said parts away from each other to provide a floating support for the roller.

13. A roller assembly as defined in claim 11 wherein said roller is of relatively slippery material and has a diameter greater than the distance between said base legs to overlap the legs and assist in slidably guiding the mounting on the base.

14. A roller assembly as defined in claim 11 wherein said base has deformable means to lock said assembly in said frame.

15. A roller assembly as defined in claim 14 wherein said deformable means includes a pair of metal fingers formed integrally with the front sections of said base and positioned in the space between the front and rear sections of the base.

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